



The University of Texas at Austin
Cockrell School of Engineering

Dean's Assessment

Zoya Heidari

Hildebrand Department of Petroleum and Geosystems Engineering
Cockrell School of Engineering

Dr. Zoya Heidari received her BSc in mechanical engineering and MSc in biomechanical engineering from Sharif University of Technology (Iran) in 2005 and 2007, respectively. She received her PhD in petroleum and geosystems engineering from the University of Texas at Austin in 2011¹. She joined the faculty in the Harold Vance Department of Petroleum Engineering at Texas A&M University as an assistant professor in September 2011, and moved to the Hildebrand Department of Petroleum and Geosystems Engineering (PGE) at the University of Texas at Austin in September 2015.

If promoted to associate professor in September 2018, Dr. Heidari will have accumulated three years of probationary service at UT and a total of seven years in rank as an assistant professor. While this case is considered to be accelerated when considering only Dr. Heidari's time at UT, her total time in rank exceeds our normal timeline.

Dr. Heidari's research is focused on the in-situ formation evaluation and petrophysical assessment of permeable rocks with a goal of quantifying the fluid storage and transport properties. Dr. Heidari has also developed several new methods and algorithms for the quantification of effective physical properties of rocks and she has advanced new procedures for the enhanced in-situ assessment of rock properties using a variety of fluid/solid contrast agents, including nanoparticles. Within the Hildebrand Department of Petroleum and Geosystems Engineering, her work contributes to three of the twelve primary research areas: formation evaluation; unconventional resources; and petrophysics and pore-scale processes.

Eight external letters were submitted as part of the promotion dossier, with three letter writers recommended by Dr. Heidari and five selected by the budget council. Seven letter writers are faculty at US institutions: Colorado School of Mines, Houston², Oklahoma, Penn State³, Stanford, and Texas A&M⁴. One letter writer is a faculty member at Imperial College London. Two of the letter writers are members of the National Academy of Engineering (NAE).

Letters were solicited from three additional external reviewers. Two declined due to personal commitments and/or lack of familiarity with Dr. Heidari's area of research. One potential reviewer did not respond to the request.

¹ Carlos Torres-Verdin supervised Dr. Heidari during her graduate studies at UT.

² Christine Ehlig-Economides served as Dr. Heidari's faculty mentor at Texas A&M for three years before she joined the University of Houston in 2014. However, there is no record of any formal research collaboration.

³ Russell Johns served on the faculty in the Department of Petroleum and Geosystems Engineering at UT Austin from 1995 to 2010. Dr. Heidari did not take any courses from Dr. Johns, and he did not serve on her PhD committee.

⁴ Michael King served as the chair of the search committee when Dr. Heidari was hired at Texas A&M. There is no record of any formal research collaboration.

Teaching

While in rank at UT, Dr. Heidari has taught one undergraduate course and two graduate courses:

- PGE 337, *Introduction to Geostatistics*
Required undergraduate course
Taught two times (average enrollment of 56 students)
Instructor ratings: 4.0 to 4.4 | Course ratings: 3.7 to 4.0
- PGE 383, *Rock Physics*
Graduate elective
Taught once (7 students)
Instructor rating: 4.9 | Course rating: 4.6
- PGE 385K, *Advanced Multi-Well Formation Evaluation*
Graduate elective
Taught once (15 students)
Instructor rating: 4.4 | Course rating: 4.1

Dr. Heidari's average instructor at the undergraduate level are slightly below the median (4.3) for both the department and the Cockrell School, and her average instructor rating at the graduate level is above the median within the department (4.3) and school (4.5). Senior faculty conducted peer evaluations in Dr. Heidari's courses two times in rank. Carlos Torres-Verdin provided very specific feedback regarding areas of potential improvement in her undergraduate course. Student comments were generally positive, but several complained about using MatLab in PGE 337.

Dr. Heidari taught eight courses as a faculty member at Texas A&M. Her average instructor rating was 3.95/5.0 in the undergraduate courses and 4.43/5.0 in the graduate courses.

Research

Dr. Heidari's research focuses on petrophysics and multi-scale formation evaluation, especially for unconventional resources (carbonates and shale formations). Her key contributions involve the use of nuclear magnetic resonance (NMR) measurements for detection of production zones, developing new models for formation evaluation, and describing the rock fabric (spatial pore geometry) in reservoirs. Highlights of Dr. Heidari's research accomplishments include:

- 30 archival journal publications in rank⁵ (34 career total). She published 23 journal papers in rank with her graduate students.
- Many of her publications are in top journals in her field including *Applied Clay Science* (IF=3.1), *AAPG⁶ Bulletin* (2.8), *Geophysics* (2.4), *SPE⁷ Journal* (2.2), and *Mathematical Geosciences* (2.0). She has also published extensively in journals that are more narrowly focused on her specific research interests: *Journal of Petroleum Science and Engineering* (1.9), *SPE Reservoir Evaluation & Engineering* (1.7), *SPE Production & Operations* (0.8), *Petrophysics* (0.8), and *Interpretation - A Journal of Subsurface Characterization* (0.7).
- An h-index of 11 (Google Scholar) with 372 citations.

⁵ 17 at UT (four are in press) and 13 at Texas A&M

⁶ American Association of Petroleum Geologists

⁷ Society of Petroleum Engineering

While at Texas A&M, Dr. Heidari established an impressive record of research funding from industry and foundations:

- She established a joint industry research program (JIP) with six members, which provided \$900,000 (all her share)
- She received \$100,000 from the American Chemical Society Petroleum Research Fund through the Doctoral New Investigator grant program.
- She received \$40,000 from the Society of Petroleum Engineers through a Research Fellowship Award for new faculty.
- She and several colleagues worked directly with industrial sponsors to secure \$930,000 (\$525,000 her share).
- She secured two research projects from JIP directed by senior faculty at Texas A&M (\$300,000 her share).
- She was a co-PI on a grant with colleagues at Texas A&M Qatar from the Qatar National Research Foundation for \$900,000 (\$110,000 her share).
- She was a co-PI on a multi-university team that secured \$3.9 million from the Skoltech Center for Research (Russia) (\$540,000 her share).
- She received four grants through the Crisman Institute⁸ at Texas A&M, for a total of \$770,000 (\$700,000 her share).

Her share of research funding at Texas A&M exceeded \$3.4 million, which is a remarkable amount. However, the level of peer-review for these grants is not clear. Since joining UT, Dr. Heidari has received one external research grant from the Texas Oil and Gas Institute of the University of Texas System, and she established an industrial affiliate research program (IAP) with one member⁹. She is the sole PI on these grants/projects. Her total funding at UT Austin is \$200,000 (all her share).

The global decrease in oil prices has reduced Dr. Heidari's ability to secure research funding from industry at UT, but she had several additional contracts pending at the time that her promotion dossier was submitted.

All the external reviewers discussed the quality and impact of Dr. Heidari's work and recommended promotion. Martin Blunt¹⁰ (Imperial College London) offered a recommendation, "My only advice would be for her to consider aiming to publish some work in higher-profile or more general journals with a broader readership: at present most papers are published in somewhat specialist petroleum publications."

Advising and Student Mentoring

At Texas A&M, Dr. Heidari graduated five PhD (one co-supervised) and eight MS students (three co-supervised). Dr. Heidari is currently advising five PhD and three MS students (one co-supervised) at UT and she continues to co-supervise a PhD student at Texas A&M. She also mentored one postdoctoral fellow at UT.

⁸ Funding is provided through an endowment and annual support from member companies.

⁹ She is currently negotiating with three additional industry members. Each member company will provide \$50,000 annually to the IAP.

¹⁰ Department of Earth Science and Engineering

University Service

Dr. Heidari's university service has been focused at the department level at UT, where she has served on a faculty recruiting committee and the graduate admissions committee. She is also a member of the Women in Engineering Program advisory committee for the Cockrell School.

Professional Service

Dr. Heidari is a member of several professional organizations. She currently serves as an associate editor for *SPE Production & Operations* and *Mathematical Geosciences* (Springer). She was recently elected to a two-year term as vice president of education for the Society of Petrophysicists and Well-Log Analysts.

Other Evidence of Merit or Recognition

Dr. Heidari's accomplishments have been recognized by the Society of Petroleum Engineers:

- She received a Research Fellowship Award in 2012 (six awarded). The award provides seed funding to new faculty members and recognizes their creative research ideas.
- She received an Innovative Teaching Award in 2015 (five awarded).
- She received the Cedric K. Ferguson Medal in 2017 for the best paper published in an SPE journal by an SPE member who is younger than 36.

Overall Assessment

In summary, Dr. Heidari is a dedicated teacher and an outstanding researcher. She established an extremely well-funded research program at Texas A&M from a variety of industry sources, and is working diligently to reestablish her research program at UT. External referees enthusiastically support her promotion. Her record of student advising and mentoring is strong. She is quite active in the professional community and she has received several competitive awards from the Society of Petroleum Engineers.

To date, Dr. Heidari has not received any federal research funding, but this is not a requirement for promotion. Many of the faculty in the Hildebrand Department of Petroleum and Geosystems Engineering receive the majority of their research funding from industry.

One may ask why Dr. Heidari is being considered for promotion at this time, when she has not yet reestablished her research program at UT. A commitment was made when she was recruited from Texas A&M that her promotion case would be considered in a timely manner. The department budget council and I do not believe that the global downturn in oil and gas prices should be the deciding factor in the duration of her probationary period at UT. As such, I believe that Dr. Heidari's performance meets or exceeds expectations for early promotion to associate professor with tenure in all categories, and I support this case without reservation.



Sharon L. Wood, Dean
20 November 2017

Candidate's Summary on Research

Table 1. Research Summary

Metric	Value
Peer-reviewed journal publications (in rank and total)	30 / 34
Peer-reviewed conference proceedings (in rank and total)	59 / 70
Number of journal papers in rank with supervised student(s) from UT as co-author	15 with my students (TAMU and UT) after I joined UT, total of 23 with my students in rank
Total citations of all publications (career) from ISI Web of Knowledge	55
h-index (career) from ISI Web of Knowledge	4
Total citations of all publications (career) from Google Scholar or Publish or Perish	349
h-index (career) from Google Scholar or Publish or Perish	11
Total external research funding raised in rank	\$9,490,449
Total external research funding raised in rank (candidate's share)	\$3,414,305 ¹
Total number of external grants/contracts awarded in rank	16
Number of external grants/contracts awarded in rank as PI	11 (9 single PI, 2 with Co-PIs)

Table 2. External Grants and Contracts Awarded

Total **\$9,490,449**, My Share **\$3,414,305²** (\$2,282,113 as the PI, \$1,132,192 as a Co-PI) Funded Research
+ **\$2,313,638** research funds under consideration/negotiation/review+**\$100,000** pending paperwork at UT Austin
+\$12,000,000 W. D. Von Gonten Rock Physics Laboratory (Initial proposal preparation, Equipment selection and order)

Role of Candidate and Co-Investigators	Title³	Agency	Project Total	Candidate's Share	Grant Period	Institution to which the award was made
PI	Integrated Formation Evaluation in South-central Delaware Basin and North-central Midland Basin Using Well Logs and Core Measurements	Texas Oil and Gas Institute (Part of the UT System, there has been a proposal and research agreement with specific budget, tasks, and timeline)	\$98,910	\$98,910	01/17 – 08/17	UT Austin
PI	Industrial Affiliate Research Program on “Multi-Scale Rock Physics for Unconventional and Carbonate Reservoirs”	BP (will pay for the 2 nd year in August, included in sum) Statoil (under negotiation, not included) Baker Hughes (Letter Attached, not included)	\$100,000 (\$50,000/year per company)	\$100,000 (\$50,000/year per company)	07/16 – present	UT Austin
PI	Joint Industry Research Program on “Formation Evaluation, Petrophysics, and Reservoir Characterization for Unconventional and Carbonate Reservoirs”	Aramco Services Company, BHP Billiton Petroleum, BP, Chevron, ConocoPhillips, and Devon Energy	\$900,000	\$900,000	09/12 – 09/15	TAMU
PI	Application of Acoustic	Saint-Gobain Proppants	\$100,000	\$100,000	01/15 – 01/17	TAMU

¹ \$838,707 was terminated after I left Texas A&M University.

² \$50,000 of this amount is pending paperwork/invoice. I expect to receive the funds in my account in August 2017.

³ Level of competitiveness for each project is documented in an extension to Table 2 presented on Page 3.

	Measurements for Quantifying Mechanical Damage in Propping Agents					
PI	A New Method to Characterize Pore-Structure, Mechanical Damage, and Conductivity of Proppant Packs using NMR Measurements	Saint-Gobain Proppants	\$200,000	\$200,000	01/15 – 01/17	TAMU
Co-PI Grigoris Matenoglou (PI), TAMU Qatar Zoya Heidari (Co-PI), TAMU, UT Austin Vassilios C. Kelessidis (Co-PI), TAMU Qatar Georgios Papavassiliou (Co-PI), NCSR Demokritos Thomas Maris (Co-PI), University of Crete	Advanced Magnetic Resonance Imaging Methodologies for 3-D analysis of Multiphase flow processes in Oil Reservoirs and Enhanced Oil Recovery (NPRP 7-1372-2-498)	Qatar National Research Foundation	\$897,111.06	\$113,484.98 Division of labor: approximately 13%	03/15 – 03/18	TAMU, transferred to UT
PI	Impact of Organic-Matter Spatial Connectivity on Electrical Properties of Organic-Rich Source Rocks	American Chemical Society, Petroleum Research Fund (ACS PRF), Doctoral New Investigator (DNI) Research Grant	\$100,000	\$100,000	09/14 – 09/17	TAMU, transferred to UT
PI	Improved Subsurface Hydrocarbon Estimation in Organic-Rich Source Rocks Using Combined Interpretation of Well Logs and Core Measurements	Society of Petroleum Engineers (SPE) Junior Faculty Research Initiation Fellowship	\$40,000	\$40,000	09/12 – 09/14	TAMU
Zoya Heidari (PI) John Killough (Co-PI)	Application of Nanoparticle Imaging in Quantifying Diagenesis Effects of Propping Agents	Saint-Gobain Proppants	\$180,000	\$135,000 Division of labor: More than 75%	01/13 – 01/15	TAMU
Ding Zhu (PI), TAMU D. A. Hill (Co-PI), TAMU Jiajing Lin (Co-PI), TAMU Yucel Akkutlu (Co-PI), TAMU Zoya Heidari (Co-PI), TAMU	Optimizing Stimulation Treatments for PetroChina Tarim Oilfield Company	PetroChina Tarim Oilfield Company	\$450,000	\$90,000 Division of labor: Approximately 20%	09/13 – 09/16	TAMU
Ding Zhu (PI), TAMU D.A. Hill (Co-PI), TAMU Hisham Nasr-el-din (Co-PI), TAMU Zoya Heidari (Co-PI), TAMU	Acid Stimulation Research Program (ASRP). The projects I was responsible for: • Petrophysical Rock Classification using Conventional Well Logs to Detect Zones for Acid Stimulation in Carbonate Reservoirs • A Quantitative Application of Well Logs to Improve Prediction of Acid Stimulation in Carbonate Formations	Petroleum Industry (Baker Hughes, Pemex, BG Group, Petrobras, Chevron, Qatar Petroleum, ConocoPhillips, Saudi Aramco, Halliburton, Shell, Maersk, Schlumberger, and Total)	\$1,800,000	\$300,000 Division of labor: Approximately 17% (2 out of 11 projects)	09/12 – 09/15	TAMU
John Killough (PI), TAMU Zoya Heidari (Co-PI), TAMU Yucel Akkutlu (Co-PI), TAMU Berna Hascakir (Co-PI), TAMU Vivek Sarin (Co-PI), TAMU Eduardo Gildin (Co-PI), TAMU	Advanced Computational and Numerical Modeling Techniques for Hydrocarbon Recovery (Proposal: 1401945)	Skoltech Center for Research ⁴	\$3,847,910	\$538,707 Division of labor: Approximately 14%	01/15 – 01/20	TAMU
PI	Enhanced In Situ Assessment of Petrophysical Properties and Kerogen Spatial Distribution in Organic-Rich Source Rocks using Well Logs	Crisman Institute (part of TAMU)	\$313,259	\$313,259	09/13 – 09/16	TAMU
Zoya Heidari (PI), TAMU	Developing Enhanced Well	Crisman Institute (part of	\$313,259	\$234,944	09/13 – 09/16	TAMU

⁴ This project was initiated in collaboration with other universities.

John Killough (Co-PI), TAMU Mark Everett (Co-PI), TAMU	Logging Methods for Fracture Characterization in Organic-Rich Source Rocks using Nanotechnology	TAMU)			Division of labor: More than 75%		
PI	Investigating and Quantifying the Effect of Petrophysical and Compositional Properties on Electrical Resistivity of Organic-Shale Formations to Improve Well-Log Interpretation Methods	Cisman Institute (part of TAMU)	\$60,000	\$60,000	09/11 – 09/13	TAMU	
D.A. Hill (PI), TAMU Ding Zhu (Co-PI), TAMU Zoya Heidari (Co-PI), TAMU	My contribution: Quantifying Vertical Heterogeneity in Carbonate Formations using Well Logs for Improving Prediction of Acid Fracturing	Cisman Institute (part of TAMU)	\$90,000	\$90,000 Division of labor: 100%	01/12 – 01/15	TAMU	
TOTAL			\$9,490,449	\$3,414,305			

In addition to the aforementioned projects, I contributed in establishing a world-class Rock Physics Laboratory for Unconventional Resources at Texas A&M University (W. D. Von Gonten Laboratory):

- Rock Physics Laboratory for Unconventional Resources, W. D. Von Gonten Laboratories, D.A. Hill, Zoya Heidari, and Yucel Akkutlu, November 2013, \$12,000,000.

My contributions are listed as follows:

- Prepared the first draft of the proposal for the laboratory in 2011 upon joining Texas A&M University
- Contributed actively in expanding the initial proposal for W. D. Von Gonten Laboratories
- Selected up-to-date instruments for the laboratory and finalizing the quotes/orders
- Contributed actively in planning the laboratory set up and
- Prepared test procedures for some equipment

Proposals under Consideration/Negotiation: (\$2,313,638+\$100,000 pending paperwork at UT Austin)

- Integrated Formation Evaluation in South-central Delaware Basin and North-central Midland Basin Using Well Logs and Core Measurements: Phase II, Texas Oil and Gas Institute, \$100,000 (Approved, under contract), Submitted in August 2017, Funded in October 2017
- My Industrial Affiliate Research Program on “Multi-Scale Rock Physics for Unconventional and Carbonate Reservoirs” is under consideration by (Statoil (Funded in October 2017), Baker Hughes, Halliburton, and Occidental Petroleum): \$200,000 per year (supporting letter is attached)
- A proposal submitted to Saudi Aramco on “New In-Situ Reservoir Monitoring Method for Enhanced Hydrocarbon Recovery”: \$1,470,000, submitted in October 2016
- A proposal submitted to Statoil (Norway) on “Enhanced Automatic Fracture Detection and Formation Evaluation using Automatic Joint Interpretation of Image Logs and Conventional Well Logs”: \$200,000, Submitted in June 2017 (they decided to join my IAP)
- NSF CAREER Proposal on “Fundamental Investigation of Electromagnetic Properties of Rocks for Geophysical Characterization of Geothermal Systems”: \$443,638, Submitted in July 2017

Table 2 (Continued). The Level of Competitiveness of the External Grants and Contracts Awarded

Project/Sponsor	Level of Competitiveness
UT Industrial Affiliate Program (IAP)	High, Competition among other Joint Industry Programs (JIPs) and research centers in all the petroleum engineering departments in the world
TAMU Joint Industry Program (JIP)	High, Competition among other Joint Industry Programs (JIPs) and research centers in all the petroleum engineering departments in the world
Qatar National Research Foundation	High, Acceptance rate of approximately 15%
American Chemical Society, Petroleum Research Fund (ACS PRF)	High, Acceptance rate of approximately 20%
Society of Petroleum Engineers (SPE) Junior Faculty Research Initiation Award	High, Acceptance rate of approximately 6% in 2015, when I served as a reviewer
Cisman Institute	Moderate, Through ranking from 10-20 companies whose main interests were typically not Formation Evaluation, Acceptance rate of approximately 30%
Texas Oil and Gas Institute	High, Industry fund (Texas Oil and Gas industry is part of the UT system. I considered this in the industry category.

	because the research project, proposal, budget, reports, funding procedure are very similar to my industry projects)
Saint-Gobain Proppants	High, Industry fund
PetroChina Tarim Oilfield Company	Not enough information to judge, Industry fund
Acid Stimulation Joint Industry Research Program (ASRP)	Moderate/Similar to the case of Industry Research Consortia, but easier due to contributions from the senior faculty as Co-PIs
Skoltech Center for Research	High, Competition among other top institutions in the US. Received the Engineering Genesis (EG) award in 2015 and was recognized as one of the top TEES (Texas A&M Engineering Experiment Station) research awards for the year.

Clarifications on the Level of Competitiveness of the External Grants:

Industry Funding in Petroleum Engineering: The industry-funded research projects in my academic career (from September 2011 to August 2017) consists of two main categories: (A) research proposals written on one specific topic and submitted to a collaborating company for funding and (B) research consortia (my joint industry research program at TAMU and my industrial affiliate research program at UT Austin).

Category A: research projects within this category are often initiated after discussions with the petroleum industry, call for ideas from the petroleum industry, or being approached by a company for solving a challenging program that they deal with.

My research projects in this category: projects with Saint-Gobain Proppants, PetroChina Tarim Oilfield Company, and Texas Oil and Gas Institute (part of UT system)

Category B: A proposal has to be prepared for initiating research consortia on a specific field of research. The proposal is then distributed among several companies. PIs should present the idea and research innovations to these companies and invite them to support the proposed program and research vision. The success rate in attracting companies depends on factors such as the research direction/vision and ideas, technical reputation of the PI, as well as economic situation. The competition is among all the university faculty in petroleum engineering (and geosciences in my field of expertise) in the world. Although these research programs are often initiated by senior faculty, I have been successful in independently initiating successful projects in this category two times, once when I started my career at TAMU and once after I joined UT Austin (I have already secured three members for my UT industrial affiliate research program). I started the latter when the oil price was at its local minima.

My research projects in this category: UT Industrial Affiliate Research Program on “Multi-Scale Rock Physics for Unconventional and Carbonate Reservoirs” (current sponsors: BP, Statoil, Wildcat Technologies) and TAMU Joint Industry Research Program on “Formation Evaluation, Petrophysics, and Reservoir Characterization for Unconventional and Carbonate Reservoirs” (sponsors: Aramco Services Company, BHP Billiton Petroleum, BP, Chevron, ConocoPhillips, and Devon Energy)

Acid Stimulation Research Program (ASRP): I had research collaborations on two projects (out of 11 total projects defined as the research plan) within the Acid Stimulation Research Program (ASRP, a joint industry research program (Category B of industry funds), directed by Drs. Dan Hill and Ding Zhu) at TAMU. These two projects, proposed by me, were part of the initial proposal (total projects of eleven) prepared for establishing this research program, which was submitted to several oil and gas companies. I joined the team of PIs for promoting this program for attracting sponsors by making presentations to potential sponsors in the petroleum industry. The funding process/decision making is similar to other joint industry research programs.

Qatar National Research Foundation Research Grant: In the case of proposals submitted to Qatar National Research Foundation, the lead PI has to be affiliated with a submitting institution in Qatar (not necessarily TAMU) and approximately 60% of the fund has to be spent in Qatar. The rest of the PIs can be from anywhere else in the world as long as the lead PI is from Qatar.

Crisman Institute (external funding source with internal competition): The Crisman institute at TAMU was funded by the petroleum industry (10 – 20 companies, this numbers changes every year). The submitted proposals by the faculty were reviewed by the industry members (technical people from 10 – 20 companies, there can be many reviewers from each company). The Crisman committee in the petroleum engineering department was then responsible for selecting the grant winners based on the votes/rankings from the industry members (acceptance rate of approximately 30%, to the best of my knowledge).

Texas Oil and Gas Institute: Texas Oil and Gas institute is part of the UT system. I considered this fund in the industry category, because the research project, proposal, budget, reports, and funding process are very similar to my industry projects (Category A). I submitted a proposal with specific budget, tasks, and timeline to Texas Oil and Gas Institute. This project has a research agreement like other industry-funded projects. They did not issue an RFP, but they have established similar collaborations with other research teams and institutions. To the best of my knowledge, every other faculty is eligible to apply, similar to industry funds. Technical employees of Texas Oil and Gas Institute review the proposal and make decisions.

Skoltech Center for Research: A new Russian university, Skoltech (Skolkovo Institute of Science and Technology), called for proposals in 2013, asking well-established universities put together both a research and teaching program for them. A senior faculty at the Petroleum Engineering department of TAMU, Dr. John Killough, was the lead PI for this proposal. He asked me and five other faculty to serve as Co-PIs and prepare technical proposals. This proposal was prepared in collaboration with other universities. The proposal was reviewed and approved by representatives from Skoltech Center for Research. As I clarified in my research statement, my part in this project was terminated after I left TAMU.